

**What is claimed is**

1. A system for treating wastewater containing organic compounds, comprising:

an anaerobic bioreactor capable of removing organic pollutants in wastewater through anaerobic treatment process;

an aerobic bioreactor disposed rearwardly of said anaerobic bioreactor and  
5 capable of removing residual organic pollutants in the effluent of said anaerobic bioreactor through aerobic treatment process; and

a membrane separation reactor disposed rearwardly of said aerobic bioreactor and capable of separating solids from liquids in the effluent of said aerobic bioreactor.

2. The system according to Claim 1, wherein said anaerobic and aerobic  
10 bioreactors are both initially seed with anaerobic sludge.

3. The system according to Claim 2, wherein said aerobic bioreactor and membrane separation reactor can further comprise a device for recycling microbes from said aerobic bioreactor or membrane separation reactor to said anaerobic bioreactor.

4. The system according to Claim 1, wherein said anaerobic bioreactor and aerobic  
15 bioreactor are initially seeded with anaerobic sludge and aerobic sludge respectively.

5. The system according to Claim 1, wherein said anaerobic bioreactor comprises anaerobes.

6. The system according to Claim 1, wherein said anaerobic bioreactor comprises anaerobes and facultative bacteria.

20 7. The system according to Claim 1, wherein said aerobic bioreactor comprises facultative bacteria or aerobes.

8. The system according to Claim 1, wherein said aerobic bioreactor can be further

used as a tripper by shortening the hydraulic retention time, where the pH value of wastewater is increased and crystals or solids suspended therein are inserted in the floc matrix of aerobes through bioflocculation.

5 9. The system according to Claim 1, wherein said system can further comprise a pretreatment device arranged upstream of said anaerobic bioreactor for removing toxic organic substances in the wastewater so as to reduce toxic inhibition in anaerobic bioreactor.

10 10. The system according to Claim 1, wherein said system can further comprise an alkaline sludge hydrolysis apparatus arranged upstream of said anaerobic bioreactor to promote the hydrolysis of aerobic wastewater and enhance the digestion capability of anaerobic sludge.

11. The system according to Claim 1, wherein said anaerobic bioreactor and aerobic reactor can further be capable of denitrification.

15 12. The system according to Claim 1, wherein said membrane separation reactor can further comprise a gas sparging device for scouring membrane.

13. The system according to Claim 12, wherein said gas is biogas or air.

14. The system according to Claim 13, wherein said biogas sparging device can reduce pH value of water by 0.2-1.0 unit and prevent membrane scaling.

20 15. The system according to Claim 13, wherein using said air sparging device can be further added with inorganic acid to adjust the pH in water.

16. A method for treating wastewater containing organic compounds, comprising the steps of:

(a) feeding wastewater containing organic pollutants into an anaerobic bioreactor where the anaerobes therein decompose the organic pollutants in the wastewater;

(b) feeding effluent of anaerobic bioreactor in step (a) into an aerobic bioreactor where the aerobes therein decompose the residual organic in wastewater and carbon dioxide dissolved in water is stripped through air stripping so that the pH value of water is increased, whereby the crystals of metal carbonate, struvite and inorganic solids are produced and inserted in the floc matrix of aerobes through bioflocculation; and

(c) feeding effluent of aerobic bioreactor in step (b) into a membrane separation reaction where solids in the water are separated to obtain effluents free of organic pollutants.

17. The method according to Claim 16, wherein said method can further comprise a step of pretreating wastewater for removing the toxic organic pollutants in wastewater before step(a).

18. The method according to Claim 16, wherein said method can further comprise a step of alkaline hydrolysis for aerobic waste sludge in an alkaline sludge hydrolysis apparatus before step (a) to promote the hydrolysis of aerobic wastewater and enhance the digestion capability of anaerobic sludge.

19. The method according to Claim 16, wherein said method can further comprise a step of scouring the membrane of said membrane separation reactor with biogas.

20. The method according to Claim 16, wherein said method can further comprise a step of scouring the membrane of said membrane separation reactor with air and inorganic acid.

21. The method according to Claim 16, wherein said method can further comprise a step of scouring the membrane of said membrane separation reactor with air.

22. The method according to Claim 16, wherein said method can comprise a step of circulating the microbes from said aerobic bioreactor and membrane separation reactor

to said anaerobic bioreactor.